

Priority Concern: County Drainage Ditches

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Water Management Plan Goal:

Improve water quality with implementation of mutually-beneficial actions addressing both environmental concerns and drainage of land.

Priority Concern

Drainage ditches can be a source of sediment from eroding ditch banks and can also quickly transport sediment and pollutants from agricultural and urban runoff to surface waters. Buffer strips along drainage ditches help reduce erosion and sedimentation by slowing overland flow, trapping sediment and other pollutants, and holding soil in place along the ditch banks. Reducing erosion and sedimentation also reduce maintenance costs for ditch owners.

Drainage systems alter natural hydrology by efficiently removing water from poorly drained areas. Peak flows in the drainage system have the potential to cause erosion both in the drainage system and in downstream surface waters. Retaining water within drainage systems can reduce peak flows and the rate of erosion in the drainage system and downstream.

Establishing vegetated ditch buffers and increasing water retention in County drainage systems are high priority actions of the Water Management Plan.

Priority Concern Assessment

Background

County Ditches were constructed to drain land and to collect water quickly and efficiently to provide better soil conditions and increase land available for the production of crops. Meandering, small and intermittent streams were deepened and straightened to facilitate better drainage. The result is a relatively straight, lineal system of open channels and subsurface tile that connects and follows naturally low lying areas and drainage ways.

There are many soils in Blue Earth County with a shallow seasonal water table. Related to agricultural land uses, saturated soils in the root zone can drown crops and fields are inaccessible for farm machinery. With good drainage the growing season is effectively extended as cropland can be planted earlier in the spring and harvested later. Cropland drainage also extends the season for fall manure application.

County ditches are often assumed to be owned by County governments. County ditches are actually privately owned, publicly managed ditches. The property owners within each ditch's watershed are collective owners of the ditch and are responsible for all costs of ditch management.

County Government Role

The State Drainage Law, Minnesota Statute, Chapter 103E, known as the Drainage Code, determines how privately-owned County ditches are managed. The Drainage Code was initiated in the late 1800s along with Federal grants to ensure that the nation's "swamps" would be drained. The purpose of the law was to establish a process to oversee drainage management among the ditch owners. The original process is very similar to the process used today. As prescribed in the Drainage Code, the Blue Earth County Government acts as the Ditch Authority and is responsible for drainage management and oversight.

If a ditch's watershed is located in two Counties, both Counties act as the Ditch Authority and the ditch is called a Joint ditch instead of a County ditch. A Judicial Ditch was initiated in a court action with management subsequently turned over to the Ditch Authority by the Court.

Blue Earth County's Ditch Authority is the County Board of Commissioners. Others involved with ditch proceedings include: County Attorney, ditch owners' attorneys, engineers, interested landowners, and State and Federal agencies. The County Board's Drainage Committee includes two County Commissioners, the County Administrator and the County-employed Ditch Manager.

Across the State, there is increasing public pressure for all Counties acting as Drainage Authorities to make more environmentally-friendly interpretations of Drainage Code. The sections of the Drainage Code most questioned are those related to buffers. A Drainage Work Group, coordinated by BWSR, was officially established by the Legislature in 2006. Part of the Drainage Work Group's focus included sections of the Drainage Code related to ditch buffers. The work group arrived at a consensus on many issues resulting in Drainage Law amendments in 2007. The Blue Earth County Ditch Manager has been participating in this and other rule-making committees at the State level. A new drainage guidance manual is currently being prepared by members of the work group and others. The 2007 Drainage Code amendments added requirements for Counties to inspect ditches, maintain ditch buffer inventories, and report annually to BWSR.

Blue Earth County Drainage Systems Inventory

An extensive drainage network covers most agricultural land in the County. This network consists of 704* miles of County ditches. County ditches include both open ditches and subsurface tile ditches. Open ditches are channels that function much like streams. There are 163 miles of open ditch in Blue Earth County. Map 97 and Table 6 display the location and type of ditches in Blue Earth County.

Table 6 Blue Earth County Ditches

| <i>Type of County Ditch</i> | <i>Ditch Miles</i> |
|-----------------------------|--------------------|
| Open | *163 |
| Tile | *541 |
| Total | 704 |

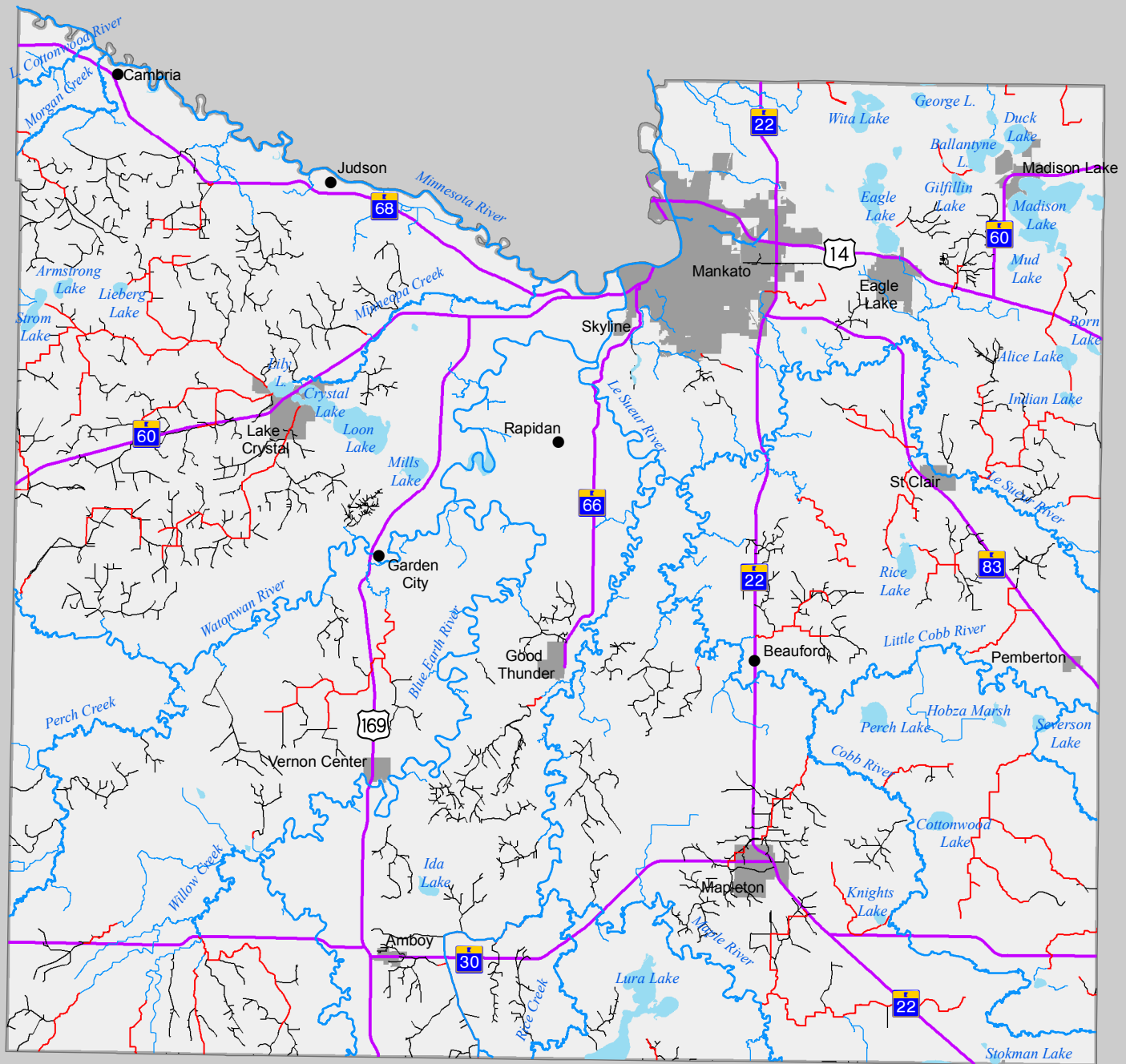
Source: Blue Earth County Taxpayer Services, Ditch Authority, 2007

*estimated and includes only ditches in BEC and portions of Joint Ditches in Blue Earth County

Some County ditches are also designated as public waters by Minnesota Statutes, Section 103G.005. The Shoreland Section of the County code identifies the public lakes, wetlands and streams which are Protected Waters under County Regulations. Map 8 on page 19 displays the protected waters in Blue Earth County and the County ditches designated as protected waters.

It is important to note that there are also privately owned ditches in the County. The number and location of private ditches is unknown. Due to the abundance of rivers, streams and intermittent streams in the County, many land owners are able to drain directly to these natural drainage systems instead of joining a County ditch system. According to estimates of the County Ditch Manager, slightly less than half of the total land area in the County drains to a County Ditch.

Map 26. County Ditch and Tile Systems



- State or U.S. Highway
 - Stream or River
 - Lake
- County Ditch Type**
- Open Ditch
 - Tile Ditch

0 5 Miles



Prepared By: Blue Earth County
Environmental Services
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Ditch Buffers

Ditch channel buffers generally benefit both the drainage function of the ditch system and water quality by reducing erosion and sedimentation. The root system and ground cover provided by vegetation in the ditch buffer stabilizes the banks of the ditch reducing the need for ditch maintenance costs. Ditch buffers can trap sediment from water and wind erosion. Ditch buffers can also reduce pesticide and herbicide “drifting” during application and surface water run off from adjacent crop land. Ultimately ditch buffers provide a physical separation between ditch channel and farm equipment applying fertilizers, pesticides, or manure.

The most commonly asked questions related to Ditch Authority administration of the Drainage Code is the required, “one rod” ditch buffers adjacent to County ditches, specifically:

- 1) *when* the one-rod buffer is required, and
- 2) *how* and *where* the one-rod buffer distance is measured from the ditch channel

Dutch Buffer Drainage Code Requirements – when buffers are required

All new ditches require a ditch buffer. Existing drainage systems are essentially “grandfathered in”, meaning they are allowed to continue without a one-rod buffer until the ditch is *improved*. Ditch buffers are required on all *improvements*. Establishing ditch buffers is not required for all *repairs*. Some repairs, such as re-sloping, require viewers and a buffer must be established.

Amendments to the Drainage Code in 2007 allows Drainage Authorities more flexibility to establish and maintain a one rod buffer strip and side inlet controls where needed (incrementally) using repair procedures and determination of damages, and no longer requires re-determination of benefits for repairs. The Drainage Code amendments are new within the last six months, and the impact on the County Ditch Authority, administrative policy, overall ditch management, and implementation of the Water Management Plan is not realized.

The Drainage Code defines four types of drainage projects: new systems, repairs, improvements and lateral extensions.

New Systems:

Generally new systems involve converting private drainage systems to public drainage systems. The number of new drainage systems constructed is few, as wetlands are now protected.

Repairs:

Repairs include minor work such as spraying for weeds and brush, removal of isolated silt deposits, bridge or culvert cleaning, removal of vegetation, debris or other obstructions. Repairs may also involve more extensive cleaning of the ditch bottom of silt deposits to the grade line and bottom width as originally constructed or subsequently improved, and could include fixing isolated side slope damage due to sloughing, fixing damage to culverts and structures, and removing large trees from the channel. These repairs are not intended to significantly increase hydraulic efficiency or capacity of the ditch, or to extend and improve drainage benefits.

Improvements:

An improvement project involves the enlarging, extending, straightening, or deepening of an established, previously constructed system. Generally an improvement project provides for the upgrading and enhancement of the existing system's hydraulic capacity and drainage ability. An existing drainage system may only be extended downstream to a more adequate outlet, and then for only one mile. A determination of benefits is required when there is an improvement.

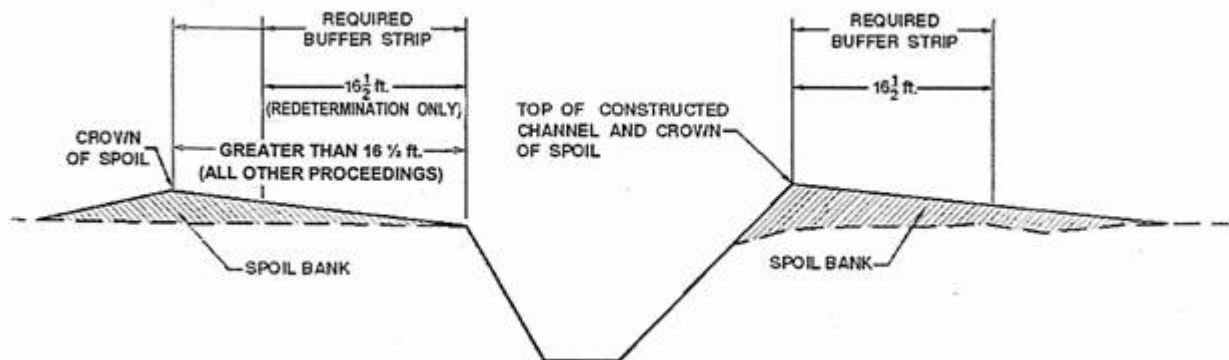
Lateral Extensions:

Lateral extensions are most often existing privately-owned tile drained area that is officially brought into the ditch. New laterals that are open ditches do require buffers. This type of extension rarely occurs.

Ditch Buffer Drainage Code Requirements – where ditch buffers are required

The Drainage Code defines where the buffer is located relative to the ditches' main channel and spoil banks and the point of beginning for measuring required ditch buffers. Changes to the Drainage Law in 2007 clarify the point of beginning for measuring the required ditch buffer strips to be the "top edge" of the constructed channel resulting from the proceeding (where and when). The Drainage Work Group is developing a guidance manual that will include ditch buffer construction requirements for consistency in administration of the Drainage Code. Figure 3 is a cross section diagram showing the points of measurement clarified by the 2007 Drainage Code amendments.

**Figure 3 Ditch Buffer Width and Location Requirements
Drainage Code Amendments 2007**



Source: Blue Earth County Ditch Authority

Side Inlet and Tile Inlet Buffers

In some ditches, the spoil banks prevent overland surface water flow from the adjacent field to the ditch channel. Side inlets are constructed to allow controlled drainage from the adjacent, low lying areas to the ditch channel. Buffers around side inlets can provide the same services as ditch buffer strips by reducing erosion and sedimentation. Side inlet buffers can be established as part of the ditch buffer.

Tile inlets in the ditch system can also be the source of pollutants and sediment. Water quality and ditch function can be protected and improved with tile inlet buffers. This is

particularly true when established in areas where soil erosion potential is relatively high with slope, slope length and soil type conditions all contributing factors. Tile inlet buffers and other agricultural best management practices are discussed in the Agricultural BMP section of the Water Management Plan.

The USDA-FSA Conservation Reserve Program requires a greater buffer width than the Drainage Code. The USDA has determined buffer/filter strips be a minimum of 33 feet wide to protect water quality.

Ditch Buffer Vegetation

Drainage code changes in 2007 state that drainage authorities should give preference to planting native species of a local ecotype on required ditch buffer strips. Some of the concerns related to use of native plant species include costs compared to standard grass mixes, time for establishment, maintenance needs and wildlife impacts. Ditch buffers can provide wildlife habitat, such as pheasant nesting areas. Routine ditch maintenance such as mowing and use of herbicides can negatively impact wildlife. The sharp-edged, lineal, narrow shape of a ditch buffer strip is not ideal habitat for some types of wildlife species and may provide easy access for predators or nuisance wildlife species such as raccoons, coyotes and opossum. When considered in association with larger wildlife patches, parts of some County Ditches in Blue Earth County have the potential to provide viable corridors for wildlife to move across the landscape, particularly if vegetation and other wildlife needs are planned and accommodated in priority areas. Wildlife is discussed in more detail in the Wetland and Wildlife section of the Water Management Plan.

Hydrologic Impacts

Drainage in urban, rural and agricultural areas changes the natural hydrologic cycle in order to lower the seasonal high water table. Ideally, rainfall naturally infiltrates to recharge shallow and deep aquifers and surface run-off is minimal. In agricultural areas with poorly drained soils or soils with a high seasonal high water table, subsurface drainage collects groundwater at a fairly shallow depth and discharges to a ditch, river, stream, lake, wetland or other surface water. In urban areas, impervious surfaces provide no infiltration and all rainfall runs off rapidly. The overall volume and rate of water discharged to surface water during rain events and snow melt is increased as water that would have infiltrated to ground water is diverted to surface water relatively quickly. The change in rate and volume can cause erosion of surface water channels within the system and downstream as the channel widens or deepens to carry the increased flow. Surface water channels include any sites with flowing water such as rivers, streams, intermittent streams, the ditch channel itself, gullies and outfalls. Downstream channel impacts are dependent on variables such as the amount of change and the condition of the existing channel. In general, drainage policy minimizing or reducing increases in rate and volume of water can protect surface water channels. Partially restoring natural hydrologic function by providing areas for water retention and infiltration effectively decreases the rate and volume of discharge to surface waters and increases ground water recharge.

Many of the County tile ditches and open ditches are overloaded with water during storm events and snow melt due to the addition of private tile drainage and the construction of laterals. Overloading older, ditch and tile infrastructure increases maintenance costs as

sections of the tile system can collapse. To solve the combined problem of overloading and aging drainage infrastructure, ditch owners sometimes propose increasing flow capacity by replacing a tile ditch with an open ditch, widening and deepening an existing open ditch channel, or increasing the size of the tile mains. Reducing peak flows to the ditch can help avoid this expense, reduce downstream impacts and improve water quality. In many cases, establishing water retention areas and restoring wetlands can be a cost effective alternative to or reduce costs of a ditch improvement project.

Establishing water retention areas can have both positive and negative economic impacts the ditch system. For example, if water retention is added to an overloaded ditch system, the need to improve the ditch and the project costs might be avoided. In another example, if a ditch improvement project is necessary, the land needed for retention is purchased by the entire ditch system adding to the total ditch project costs. The land in the retention area is no longer benefiting from the project and therefore not generating revenue for the project. Ditch system owners often argue that the public benefit must be considered and public money should be used to establish retention and other conservation practices that do not benefit ditch owners.

Water Retention and Wetland Restoration

More than 90% of the pre-settlement wetlands in Blue Earth County were drained to provide additional land for crop production and construction of dwellings and urban land uses. Wetland functions include water retention and infiltration and ground water recharge. Some wetlands were part of hydrologic complexes consisting of basins and flowing connections depending on water levels related to seasonal conditions. Wetlands are addressed in the Wetland and Wildlife Section.

The most viable locations for water retention are typically natural depressions where wetlands were likely drained during construction of the drainage system. Many of these depressions are poorly suited for crop production due to wetness, seasonal flooding and the resultant crop damage. A review of publicly available information can assist with identification of potential retention areas and wetland restorations. The USDA Soil Survey and the County's LIDAR and two foot contour maps can be used to identify depressions. Historic aerial photos of crop damage, flooding, wetlands and land use such as pastures and woodlots can also show areas where water is naturally collected on the landscape.

In recent years, retention basins and wetland restoration projects have been common with most ditch improvement projects in Blue Earth County. These local projects have involved many partners, including the ditch owners, CREP, DNR, Blue Earth County Chapter of Minnesota Pheasants, USFWS and others. Financial resources and incentives to restore wetlands and wildlife habitat can benefit a ditch project by providing retention areas and vegetated cover that reduce erosion and maintenance costs.

Wetland restorations can provide habitat for desirable wildlife species. Consideration of size, shape, placement and proximity of restored wetlands to other existing wildlife habitat patches can further maximize the potential to attract desirable wildlife species. Landowners and the public also experience quality of life benefits with increased local wildlife populations.

Blue Earth County Public Ditch Management Program

County Ditch management responsibilities include administering the requirements in State Drainage Law for individual ditch system projects and collective, day-to-day management of drainage systems under the jurisdiction of the County. Blue Earth County employs a Ditch Manager whose salary is paid by the County.

Data and Information

Currently the County Ditch Manager collects and manages ditch data and information using a standardized, systematic approach, including physical, in-the-field viewing, data collection, data maintenance, and conversion of historical data to electronic information. In order to provide meaningful data, consistent inspection procedures and data collection methods have been developed the Ditch Manager.

1) Ditch Inspections.

The Ditch Manager conducts field inspections each year. All 163 miles of open ditches cannot be inspected in a single year. Field inspections involve walking the entire length of each open ditch identifying and using GPS to record locations of: 1) bank sloughing, 2) tile outlets, 3) blow outs, 4) surface gullies, 5) formation of new gullies as a result of redirected surface flow due to erosion and sedimentation, 6) wildlife dens and dams, and 7) any other current or potential problems.

Ditch inspections are limited by seasonal conditions. Inspections are best made in a dry spring and in fall when a hard freeze flattens buffer vegetation. Ditches cannot be inspected when: 1) crops are in field, 2) ditch buffer vegetation is high, 3) muddy or conditions limit access. Without varying seasonal conditions, it is impossible to develop accurate, annual plans and budgets.

Where repair orders were issued, the Ditch Manager follows up by verifying the repair was made.

2) Data Management.

The County has established a GIS based data management system. This includes an inventory of problem areas identified during the physical assessment of ditches. The Ditch Manager uses GPS in the field to identify problem areas with location and descriptive information.

Historic records including ditch maps, improvements, petitions, plans are on file with the County. These records are important for overall ditch management, planning and re-determination of ditch benefits. Historic notations in records also document why decisions may have been made possibly explaining current problems. Historic ditch records will eventually become part of the GIS data management system. As time allows, historic records are being scanned and entered into the system. Even though the process of scanning is relatively simple, it is time consuming. Completing the process of scanning historic documents will likely span more than the five year planning period. Due to inherent poor quality as a result of long term storage, the documents are fragile and must be handled carefully. Historic notations may be significant but interpretation may be difficult if unfamiliar with drainage, drainage history and the

County. Thorough and accurate recording of historical information is essential for meaningful use of the data.

3) Management tools

Blue Earth County has strong GIS capabilities. Blue Earth County's LIDAR data, two foot contours and aerial photos have greatly enhanced the County's ability to manage County ditches. County plans, programs and policies related to ditch management and water quality can be developed in-County with local information and water quality data from watershed plans and other sources as appropriate.

4) Reporting

With 2007 amendments to the Drainage Code, Blue Earth County will be required to annually report the following buffer strip information to the BWSR on a calendar year basis:

- a. Number and types of action for which viewers were appointed.
- b. Miles of buffer strips established according to 103E.021.
- c. Number of drainage system inspections conducted.
- d. Number of violations of Section 103E.021 identified and actions taken.

Status of Blue Earth County Ditch Buffers

In 2007, the County had completed ditch inspections on 25 miles of the total 163 miles of open County Ditches.

The County does not have a plan or procedure for routine ditch maintenance or repairs. The Blue Earth County Ditch Authority generally responds to land owner-initiated requests. Local interest is generally related to ditch repair and maintenance costs associated with aging systems for example.

2007 Drainage Code Amendments

With the 2007 Drainage Code Amendments, Counties are now allowed to require buffer strips incrementally for better ditch function. This increased flexibility may provide opportunities to maximize financial and other resources to target implementation efforts establishing buffers in high priority areas to accomplish multiple goals, including improved water quality, improved ditch function, reduced frequency of ditch inspections and reduced ditch maintenance costs.

Ditch Improvement Projects Environmental Review

Improvement projects require an environmental review. Blue Earth County's approach to environmental review is consistent with the Drainage Code. The environmental criteria listed in 103E.015 include:

103E.015 CONSIDERATIONS BEFORE DRAINAGE WORK IS DONE

Subdivision 1. Environmental and land use criteria

- (1) private and public benefits and costs of the proposed drainage project;
- (2) the present and anticipated agricultural land availability and use in the drainage system project or system;
- (3) the present and anticipated land use within the drainage project or system;
- (4) flooding characteristics of property in the drainage project or system and downstream for 5-, 10-, 25-, and 50 year flood events;

- (5) the waters to be drained and alternative measures to conserve, allocate, and use the waters including storage and retention of drainage waters;
- (6) the effect on water quality of constructing the proposed drainage project;
- (7) fish and wildlife resources affected by the proposed drainage project;
- (8) shallow groundwater availability, distribution, and use in the drainage project or system; and
- (9) the overall environmental impact of the above criteria

Subd.2. **Determining the public utility, benefit, or welfare.** In any proceeding to establish a drainage project, or in consideration of or other work affecting a public drainage system under any law, the drainage authority or other authority having jurisdiction over the proceeding must give proper consideration to conservation of soil, water, forests, wild animals, and related natural resources, and to other public interests affected, together with other material matters as provided by law in determining whether the project will be of public utility, benefit, or welfare.

Environmental review also involves the DNR. In the past, the DNR Commissioner was required to provide comments on drainage projects. In future years, the local DNR offices with greater knowledge of the project area will be providing comments instead of the DNR Commissioner.

The County Water Management Plan, Comprehensive Land Use Plan, Greenprint, watershed plans and other plans related to the conservation of soil, water, forests, wild animals and other resources can be considered in the determining the public utility, benefit or welfare as described in 103E.015, Subdivision 1 and 2.

Municipal Impacts

Municipalities are part of several County Ditch watersheds in Blue Earth County. Storm water drainage discharges have increased the rate and volume of water to a few County ditches causing erosion problems at the outfall and downstream. The City of Mapleton's and the City of Amboy's wastewater treatment stabilization ponds and storm water systems discharge to a County Ditch. In Mankato, Eagle Lake and Madison Lake, urban growth and conversions of cropland to urban land uses have impacted County ditches. Issues related to urban drainage connections with County Ditches are concerns primarily in areas where conversion of agricultural land to urban type of land uses is occurring. County ditch concerns at the urban and rural interface most often involve legal or management issues of the ditch and immediately surrounding land uses. These are addressed by the each city during the land development phase. The County Ditch Authority works with each municipality as needed to ensure compliance with the Drainage Code. Municipal storm water management and surface water impacts are addressed in the Stormwater Section of the Water Management Plan.

IMPLEMENTATION PLAN

County Drainage Ditches

Water Management Plan Goal:

Improve water quality with by establishing ditch buffer strips and water retention in areas where environmental concerns and drainage needs are both addressed.

GUIDING PRINCIPLES

- » County drainage is critical to a successful agricultural economy.
- » County ditches are privately owned by property owners in each ditch system.
- » The County Ditch Authority manages County ditches consistent with the State of Minnesota Drainage Law.
- » Drainage is best managed at the local level in order to incorporate sustainable socio-economic, environmental, economic and watershed needs.
- » Carefully selected land management practices can protect water quality and reduce drainage costs to land owners.
- » Ditch buffers reduce maintenance costs by reducing erosion and sedimentation in the system.
- » Ditch buffers improve water quality by reducing erosion and sedimentation.

ONGOING ACTIVITIES:

The County will continue to operate the ditch management program, including field inspections and maintaining a GIS-based inventory of ditch buffer strips and other data. The County, SWCD and partners will continue to establish ditch buffers and wetland restorations as part of ditch improvement and other projects. The County will also be reporting to BWSR on ditch buffer inventories and maintenance as required by 2007 Drainage Code amendments. The 2007 Drainage Code amendments require the County to inspect ditches every five years and every year on ditches with problems. For many ditch systems, inspections will be needed more than once in five years as discovery of new problems and annual follow-up inspections will be required. Staff time for inspections and the related expenses will likely increase significantly during the planning period. However, it is anticipated that ultimately ditch buffers will reduce ditch maintenance needs and therefore ultimately reduce the frequency of inspections in future years beyond the planning period.

The Ditch Manager position is funded by the County. Ditch buffer strips, wetland restorations and water retention areas are funded by land owners when part of improvement projects and, in some cases, with financial incentives from Federal and State government sources.

WATER MANAGEMENT PLAN:

The County will be working to increase the total miles of ditch buffers established along County, Joint and Judicial Ditches. The County will develop baseline inventory data to measure success in future years. In order to achieve Water Management Plan goals

and objectives, additional staff resources will be needed for staff at the SWCD and for financial incentives to establish ditch buffers and other BMP's.

Increasingly accessible public data related County management of ditches, buffer strips and enforcement will lead to new planning efforts during the planning period. The County will also be continuing the Greenprint project theme using GIS and LIDAR tools along with local, State and Federal plans for water quality, wildlife, land use, parks, recreation, open space, transportation, wetland management, storm water management, and other plans to identify and prioritize areas to promote voluntary establishment of one rod ditch buffer strips and buffers extending beyond one rod to include tile inlet buffers and water retention areas where appropriate to best meet comprehensive water quality, wildlife and other natural resources needs.

The SWCD will be responsible for coordinating projects funded outside of the Ditch Authority, including project funding, reporting, construction oversight, technical assistance, and education and information activities. The County will be responsible for GIS and coordinating project prioritization. The County Ditch Authority will be responsible for all requirements related to administration of the Drainage Code and overall management. The Ditch Manager's role is limited to administration and financial management in accordance with the Drainage Code.

Objective 1: Encourage voluntary establishment of ditch buffer strips on County ditches with education and information activities promoting the benefits of ditch buffers and the availability of financial incentives.

Action 1: The SWCD will provide a list of conservation funding opportunities to the Ditch Authority annually in order for the Ditch Authority to be fully aware of locally available incentives.

Action 2: The County, SWCD and NRCS will increase communications providing information about water quality related benefits of ditch buffers and financial incentives available for establishing new ditch buffers. The SWCD and NRCS prepare annual, informational newsletters. The SWCD is also developing a web-site.

Action 3: The County Ditch Authority and other County Departments will work together to provide information in general newsletters and the County web-site. The County Ditch Authority will develop written communications, such as letters and newsletters to ditch system owners when appropriate to special projects.

Objective 2: Increase the total miles of drainage ditch buffer strips on County ditches in Blue Earth County by 50 percent by 2013.

Note: To implement the actions for this objective, additional financial resources will be needed for additional staff, landowner incentives and acquisition costs.

103E 2007 Amendment: "Drainage authorities are allowed to establish and maintain 1-rod ditch buffer strips and side inlet controls where needed (i.e. incrementally) using

repair procedures and determination of damages, but not requiring re-determination of benefits.”

Action 1: Establish baseline data for this objective to consistently measure success over time, by using County data reported to BWSR to determine the total miles of ditch buffers in the County.

Action 2: Add a full-time SWCD Technician/BMP Coordinator from 2009-2012 to work at the SWCD working with conservation partners promoting and coordinating the establishment of buffer and filter strips on County ditches, tile intakes and other waterways with an emphasis on County ditches.

Action 3: Work with implementation partners to develop a reasonable, implementation goal and work plan annually for this objective assuming the addition of full time staff and financial incentives to coordinate bmp programs with a special emphasis on ditch buffers.

Action 4: Seek funding to provide financial incentives to establish ditch buffer strips on pre-identified County ditches.

Objective 3: Identify, assess and prioritize County ditch systems and areas within County ditch systems for retention, wider ditch buffers and other strategies to improve surface and ground water quality and wildlife habitat.

Note: To implement the actions for this objective, additional financial resources will be needed for additional staff, landowner incentives and acquisition costs.

103E 2007 Amendment: “Drainage authorities are allowed to establish and maintain 1-rod ditch buffer strips and side inlet controls where needed (i.e. incrementally) using repair procedures and determination of damages, but not requiring re-determination of benefits.”

103E 2007 Amendment: “Drainage authorities should give preference to planting native species of a local ecotype on required ditch buffer strips.”

Action 1: Work with local committees and workgroups with broad representatives of multiple interests similar to those formed for the Water Management Plan and Greenprint to develop criteria and methods for prioritizing program implementation. Representatives of ditch owners, wildlife conservation, rural residents, water quality and others will be involved by 2010. County GIS tools will be used to support the process.

Action 2: Priority areas will be assessed based on methods and criteria developed by committees and workgroups for program implementation as well as available resources, regulations and other requirements. The County and SWCD will work together to identify representatives and frequency of program planning and evaluation as needed. County GIS tools will be used to support the process.

Action 3: Identify and assess opportunities to reduce impacts from municipal storm water discharges with best management practices, including water retention, wetland restoration, buffer strips, grassed waterways, and other erosion control practices.

Action 4: Identify native plants best suited for ditch buffer plantings, assess and prioritize locations for native plants in conjunction with wildlife and other priority areas.

Objective 4: Increase water retention and wetland restoration in County ditch drainage systems by 30 percent by 2013.

Note: To implement the actions for this objective, additional financial resources may be needed for engineering costs, landowner incentives and acquisition costs.

103E.015 CONSIDERATIONS BEFORE DRAINAGE WORK IS DONE

Subdivision 1. Environmental and land use criteria

- (1) the present and anticipated agricultural land availability and use in the drainage system project or system;
- (2) the present and anticipated land use within the drainage project or system;
- (3) flooding characteristics of property in the drainage project or system and downstream for 5-, 10-, 25-, and 50 year flood events;
- (4) the waters to be drained and alternative measures to conserve, allocate, and use the waters including storage and retention of drainage waters;
- (5) the effect on water quality of constructing the proposed drainage project;
- (6) fish and wildlife resources affected by the proposed drainage project;
- (7) shallow groundwater availability, distribution, and use in the drainage project or system; and
- (8) the overall environmental impact of the above criteria

Action 1: Seek funding to expand the engineering and environmental review assessment for ditch improvement and repair projects to study flooding characteristics and downstream impacts during small, frequent storm events as well as 5, 10, 25, 50 year flood events; water storage and retention practices; and water quality effects.

Action 2: Establish baseline data for this objective to consistently measure success over time.

Action 3: Seek funding to provide financial incentives to establish water retention areas.

Action 4: Work with local conservation groups and State and Federal agencies to seek funding and restore and enhance wildlife habitat in priority areas.

Action 5: Add a full-time SWCD Technician/BMP Coordinator from 2009-2013 at the SWCD working with conservation partners promoting and coordinating the establishment of water retention and wetlands.

Action 6: Work with implementation partners to develop a reasonable, implementation goal and work plan annually for this objective assuming the addition of full time staff and financial incentives to coordinate bmp programs with a special emphasis on ditch buffers.

